XXXIV.—*Swifts and Humming-birds.*

By Frederic A. Lucas.

Dr. Shufeldt's recent paper on the Swifts and Humming-birds[*] is the argument of an Advocate rather than the careful summing-up of an unbiased Judge, and I for one must protest, not only at much of the matter contained in the article, but also at the manner of its presentation. Noteworthy in this latter connection is the continued reiteration that nowadays none, save a few benighted ornithologists, consider that the Swifts have aught to do with the Humming-birds, this idea, we are told, having been long ago exploded. Even while Dr. Shufeldt's paper was in the printer's hands there have appeared two important contributions to ornithological literature,—the British Museum Catalogue of *Trochilidæ*, by Mr. Salvin, and a paper on Avian Classification, by Dr. Gadow. Neither of these gentlemen seems to have been aware of the "explosion," nor have Dr. Fürbringer, Dr. Sharpe, or Professor Huxley (whom Dr. Shufeldt persistently misquotes[†]) recanted their previously expressed opinions, so that in justice to his readers Dr. Shufeldt should tell us precisely who, among ornithologists, have accepted his conclusions that the Swifts are practically Swallows and have no relations with the Humming-birds.

Let me say here that it is not the separation of Swifts and Humming-birds, provided they are kept near one another, that is to be objected to, so much as the constant statement that they have no characters in common, while the Swifts and Swallows are so near akin. My own views at present are that through *Macropteryx* the Swifts touch the Goatsuckers *closely*; that through *Chætura* they have relations with the Humming-birds, although in certain structural points the generalized *Macropteryx* shows Trochiline relations also; and that, unless we can take the Goatsuckers into the great Passerine circle, the Swifts too must stay outside.

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[*] 'The Ibis,' January 1893, pp. 84–100.

[†] Not that Professor Huxley's words have been changed, but that they have been so used as to convey a false impression; and this, to my mind, is the most unfair kind of misquotation.

In reply to the query "How is it that Humming-birds are restricted to America?" I would say, for much the same reason that torpedo-boats do not cross the Atlantic—lack of power and fuel-capacity. The Humming-birds, from their great local multiplicity of species, probably originated in South America and spread northward *. Since their excessive activity calls for great expenditure of muscular tissue, they need a liberal supply of food, and this food consists principally of minute insects which are to be had only in proper localities. Migration by way of the north is out of the question; there are no way-stations on the ocean ferry, and even were the Humming-bird sufficiently powerful in flight to cross, it would starve to death on the way.

We are told that, as to plumage, Swifts have no sexual colour-distinctions, nor plumes, nor ornamental feathers, while Humming-birds have all three. Now in *Chætura rutila* and *C. rufitorques*, and in all the species of *Macropteryx*, the males and females are different, while in about one-third of the known species of Humming-birds the sexes are robed alike. The long tail-feathers of some of the Swifts might well be considered ornamental, and all species of *Macropteryx*, notably *M. mystacea*, have local plumes or crests.

As to pterylosis, the Humming-bird has a spindle-shaped apterium on the crown, and the Swift an inverted, crescentshaped apterium over each eye, these being, so far as material has been examined, peculiar to the respective groups and not found in the Swallows.

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* Birds of restricted range seem to have a tendency to split up into species and subspecies, as in the well-known case of the birds of the Galapagos Islands. In the American genus *Harporhynchus* one species, *H. rufus*, is migratory and widespread, the eight other species and subspecies are non-migratory and of restricted and contiguous habitats, and we see the same thing repeated in the genus *Pipilo*. There would seem to be good reason for this. As a non-migratory bird spread outward from its original centre, it would meet in different localities with different conditions of food, climate, and physical surroundings. Generation after generation would be subjected to the same conditions as their ancestors, and any forces that might cause variation would be continuously at work, while any variation, whether arising from external or internal causes, would stand a better chance of perpetuation by in-breeding among birds living and breeding in one locality than among migratory species, where the chance of destruction or separation of individuals during their journeys would naturally be greater.

The dorsal tract of the Swallow is an inverted, short-armed Y; the dorsal tracts of the Swift and Humming-bird are continuous from neck to rump, with a spindle-shaped apterium in its centre. Both Swift and Humming-bird have apteria on the nape and on the inferior surface of the neck, and although Dr. Shufeldt says these are "*never* present in the Swifts or Swallows," he might, had he examined such genera as *Macropteryx* and *Collocalia,* have written otherwise. The statement that the black pigment spaces, so apparent on the brachia of Swifts, are entirely absent in Humming-birds is equally erroneous, for they are present in such forms as *Campylopterus* and *Florisuga.* On the whole, the pteryloses of Swift and Humming-bird are more alike than those of Swift and Swallow, as a glance at the figures of Nitzsch will show.

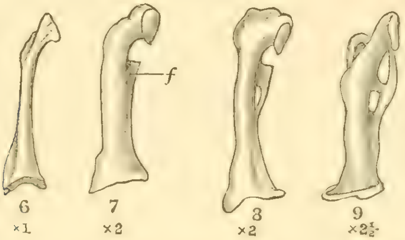
The pterylosis of the Humming-bird is one of the prettiest instances of adaptation imaginable: the nuchal apteria come where the neck touches the back and breast, the lateral apteria receive the folded wings, and the ventral apterium allows the warm body to come in contact with the eggs.

It seems almost superfluous to refer to the sternum, this bone having been so often discussed; but as it is implied that undue stress has been laid upon the un-notched character of the posterior border of the Swift's sternum, it may be well to say that the value of this portion of the sternum is small when compared with that of its other portions, and in the present instance may well be omitted.

The Swallow, in common with all Passerine birds, has a large Y-shaped manubrium, grooves for the coracoids, and large costal processes to which the ribs are attached. The sternum of the Humming-bird has a rudimentary manubrium and costal processes, elliptical facets for the coracoids, and the ribs are joined to its sides, all of this being equally true of the sternum of the Swift, except that the costal processes are a shade larger and may bear one, or, as in *Macropteryx,* even two ribs.

Coming to the skull, we find that Professor Stewart considers the palate of the Humming-bird as a modification of the ægithognathous type *; and if this be so †, Swift, Swallow, and Humming-bird would in this particular be alike.

Fig. I.



Right coracoids of :—6. *Progne subis,* × 1 ; 7. *Chætura pelagica,* × 2, *f*, line to foramen ; 8. *Macropteryx coronata,* ×2 ; 9. *Campylopterus hemileucurus,* ×3.

We read that in the Swifts the coracoids are "much as we find them in Swallows," while those of the Humming-bird are "*totally* unlike this bone in *Cypseli*." The uniqueness of the Humming-bird's coracoid consists largely in having the "tendinal canal closed by bone and the shaft perforated by a large foramen below it." Now all the Swifts that I have seen possess the lower perforation mentioned, while the ossification of the ligament which holds in place the great levator tendon would give the closed canal. How little change in the existing state of things is needed to bring about this result, especially in *Macropteryx*, can be seen at a glance. Also the coracoids of Swifts and Humming-birds agree in lacking the epicoracoid of the Swallow, as well as in the vastly more important feature of being supported on facets instead of being, like those of the majority of birds, implanted in grooves. The coracoid of the Swallow is slender, imperforate, has a well-developed epicoracoid, and is implanted in a groove. From these notes and from the accompanying figures (6–9) the reader may draw his own conclusions.

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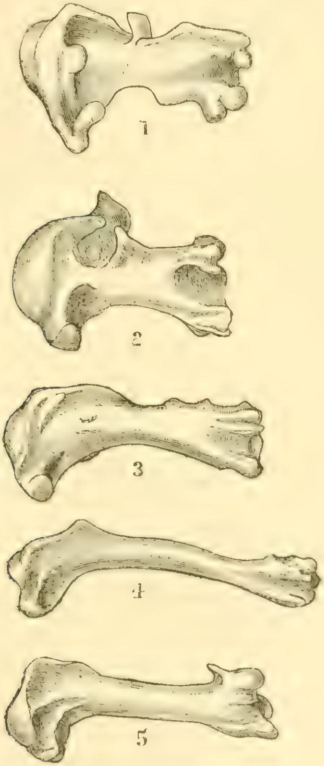
* *Cf.* Sharpe, 'A Review of the Recent Attempts to Classify Birds,' p. 81, footnote.

† Professor Stewart will, I trust, pardon this quotation, as I have not seen any publication of his views other than the note alluded to, and know not whether subsequent dissections have confirmed his opinions. The Humming-bird's palate certainly suggests a case of arrested development.

Fig. II.



Right humeri of:—1. *Campylopterus hemileucurus*, ×4; 2. *Cypselus apus*, ×2½; 3. *Macropteryx klecho*, ×2; 4. *Chordeiles virginianus*, ×1; 5. *Progne subis*, ×2.

It would require careful dissections, much close study, and a lengthy article to do justice to the wing of the Humming-bird, and I have contented myself with offering a series of figures (1–5) showing what appear to me various steps in the transition from the humerus of the Goatsucker to that of the Humming-bird, and I fail, in any of them, to see any striking morphological resemblance to the humerus of a Swallow. It must be steadily borne in mind that, as the Humming-bird is without a rival in its power of aerial evolution, we must expect to find such mechanical and adaptive modifications in its mechanism as exist in no other bird, and we must not confound physiological modifications with morphological resemblances.

The comparison of the furcula of the Humming-bird to that of the Albatross, coupled with the remark that these birds, as well as the Swifts, are great fliers, would lead one to infer that the similarity was due to physiological adaption. This, however, can scarcely be the case, since there are no two birds whose mode of flight is more at variance than those named above. In the case of the Humming-bird, too, the furcula is not functional; the bird could get along without it, while in the Albatross its power to brace the wings apart is but trifling. The resemblance is apparently due to the fact that in many points these birds are both generalized and the furcula morphologically low, its pattern being in fact suggestive of what we see in many lizards.

There are some points in the Humming-bird's wing that are structurally more Passerine than what we find in similar portions of the wing of the Swift, and this, in conjunction with Professor Stewart's observations on the palate, will bring the *Trochili* a step or two nearer the great Passerine assemblage than they have usually been placed.

There are other points that I would like to discuss, but this paper is already rather long. I would like to acknowledge my indebtedness to Dr. Sclater for specimens of *Cypseli*, and to express my regret that untoward circumstances have prevented me from completing my examination of them.

In conclusion, I wish to say that these remarks are not put forward in any spirit of captious criticism. No one admires Dr. Shufeldt's enthusiasm, or envies him his power of continued application, more than myself, nor do many better appreciate the amount of information that he is rendering available. What I *do* object to in the present connection is the utterance of sweeping generalizations based on the examination and comparison of a limited number of local forms, and the assumption that certain questions have been definitely answered when we are really just beginning to gather in the facts that shall make such answer possible.

Festina lente is a good motto. When we know the anatomy (using the term in its broadest sense) of every well-marked form among the Swifts and Humming-birds, when the embryology of the two groups has been thoroughly worked out, when we are agreed as to what are morphological and what purely adaptive characters, then, and only then, can we with some degree of certainty say what are the exact relations between these two highly specialized forms.

XXXV.—*On the Occurrence of White's Thrush in European Russia.* By Dr. M. Menzbier, Professor in the University of Moscow.

The life-history and geographical distribution of White's Ground-Thrush (*Turdus varius*) being so insufficiently known, I have endeavoured to procure some facts for the elucidation of this question. Contrary to the opinion of Mr. Seebohm that the western range of this species in summer is probably limited to the watershed of the Yenisei and the Lena, I have always been of opinion that White's Ground-Thrush is distributed in the summer throughout the whole wooded districts of Siberia. My conviction was based on the fact that this species is much too common in Western Europe to be only an accidental straggler from Eastern Siberia. Moreover, it is very remarkable that not a single occurrence of White's Ground-Thrush from any part of Russia has been recorded, though it without doubt migrates to Western Europe through our country. For many years I have sought for White's Ground-Thrush among skins of the Missel-Thrush (*Turdus viscivorus*) from various parts of Russia, but in vain. At last, during my visit to Siberia